

# ***Infrastructure Considerations for Space Fission Capabilities Beyond Prometheus-1***

***J. Wheeler***

***Office of Nuclear Energy, Science and Technology  
U. S. Department of Energy***

# ***Surface Fission Power Infrastructure Considerations***

- *Infrastructure for surface and in-space power systems should share a large number of basic infrastructure elements*
  - Degree depends on extent to which in-space reactor technologies are adaptable for surface power applications
- *Component and integrated system tests may have the following differences:*
  - Technology (e.g. materials, power conversion)
  - Configuration differences (e.g. radiators, shielding)
  - Power-level and operations
  - Environment considerations (atmosphere, dust, gravity)

# **Additional Strategic Infrastructure Considerations**

- *Multi-Megawatt Power Systems*
  - Facility sizing and accommodating advanced technologies are important considerations
- *Timing (phasing) and Number/Type of Facilities*
  - Where would surface fission power systems and/or multi-megawatt systems fit in the “queue”?
  - Would the same or different facilities be needed to support ground testing of in-space and surface fission power systems?
  - What is preferred level-of-integration for various test facilities?
  - To what extent should requirements for major infrastructure elements take into account the ability to conduct testing in support of surface fission power and multi-megawatt NEP?
  - What infrastructure approaches provide most affordable path for potential follow-on units or next generation development efforts?